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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/526,619

03/16/2000

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FUJH 16.870

1907

26304 7590 01/31/2008
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EXAMINER

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ART UNIT

PAPER NUMBER

2621

MAIL DATE

DELIVERY MODE

01/31/2008

PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte AKIHIRO YAMORI, TAKASHI HAMANO,
KIYOSHI SAKAI, and KOUJI YAMADA

Appeal 2007-3109
Application 09/526,619
Technology Center 2600

Decided: January 31, 2008

Before KENNETH W. HAIRSTON, SCOTT R. BOALICK, and JOHN A.
JEFFERY, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

1 Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 23-28.¹ We have jurisdiction under 35 U.S.C. § 6(b), and we heard the appeal on January 22, 2008. We reverse.

¹ Although claim 28 does not appear in the Claims Appendix of the Appeal Brief, claim 28 is nonetheless on appeal. *See* App. Br., at 2.

STATEMENT OF THE CASE

Appellants invented a method for encoding moving pictures. A picture frame is predicted using both forward and backward picture frames. Specifically, the top field of the picture frame is predicted from either the top or bottom field of a forward picture frame. Also, the bottom field of the picture frame is predicted from either the top or bottom field of a backward picture frame. A predictive picture is generated according to this prediction and used to encode the picture frame.² Claim 23 is illustrative:

23. A moving pictures encoding method for encoding a picture frame of an input signal by predicting from both forward and backward picture frames, the picture frame having top and bottom fields, which respectively include odd numbers and even numbers of pixel scanning lines of the picture frame, the method comprising the steps of:

first predicting in a macro-block unit composed of (n x n) pixels, the top field of the picture frame from either one of top and bottom fields of only the forward picture frame, and the bottom field of the picture frame from either one of top and bottom fields of only the backward picture frame;

generating a predictive picture according to the prediction; and

encoding the picture frame of the input signal by using the generated predictive picture.

The Examiner relies on the following prior art references to show unpatentability:

Lim	US 6,430,223 B1	Aug. 6, 2002 (filed Oct. 30, 1998)
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Appellants' admitted prior art in Figures 28-31 of the present application ("AAPA").

² See generally Spec. 10:5-15:9 and 18:18-19:11.

1. Claims 23, 24, 26, and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Lim.
2. Claims 25 and 28 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Lim and Appellants' admitted prior art (AAPA).

Rather than repeat the arguments of Appellants or the Examiner, we refer to the Briefs and the Answer³ for their respective details. In this decision, we have considered only those arguments actually made by Appellants. Arguments which Appellants could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

OPINION

The Anticipation Rejection

We first consider the Examiner's rejection of claims 23, 24, 26, and 27 under 35 U.S.C. § 102(e) as being anticipated by Lim. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984); *W.L. Gore and Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

The Examiner has indicated how the claimed invention is deemed to be fully met by the disclosure of Lim (Ans. 3). The Examiner relies upon Figure 9C as teaching predicting the top field of the picture frame using only top or bottom fields of the forward picture frame as claimed. Also, the

³ We refer to the most recent Answer mailed Jan. 12, 2007 throughout this opinion.

Examiner cites Figure 10B as teaching predicting the bottom field of the picture frame from either top or bottom field of only the backward picture frame as claimed (Ans. 3-5).

Regarding the independent claims, Appellants argue that Lim does not disclose (1) predicting (a) the top field of a picture frame from either the top or bottom fields of *only* the forward picture frame, and (b) the bottom field of the picture frame from either the top or bottom field of *only* the backward picture frame, and (2) generating a predictive picture according to the prediction as claimed.

Appellants argue that Lim describes a bidirectional picture encoded where both of the top and bottom fields are predicted from *both* forward *and* backward frames. In this regard, Appellants emphasize that Figures 9B and 9C of Lim go together, as well as Figures 10B and 10C, to illustrate B picture bidirectional motion prediction for obtaining distinct motion vectors. As such, Appellants argue, Lim does not disclose any scaling method that uses *only* the backward motion prediction component of a B picture shown in Figure 9C, or *only* the forward motion prediction component shown in Figure 10B (App. Br. 7-9; emphasis added). Rather, Appellants argue that Lim requires (1) both Figures 9B and 9C for a top field, and (2) both Figures 10B and 10C for a bottom field (Reply Br. 5).

The issue before us, then, is whether Lim discloses (1) predicting (a) the top field of the picture frame from either the top or bottom fields of *only* the forward picture frame, and (b) the bottom field of the picture frame from either the top or bottom field of *only* the backward picture frame, and (2) generating a predictive picture according to the prediction as claimed. For the following reasons, we find that Lim does not disclose these limitations.

Lim discloses a motion prediction apparatus comprising first and second motion estimators 50, 60. The first motion estimator 50 comprises a single-pixel motion vector detector 52 that detects motion vectors MV_{tt} and MV_{bb} respectively. A first scaler 56 detects motion vector MV_{bt} by scaling motion vector MV_{tt} , and a second scaler 58 scales motion vector MV_{bb} to detect motion vector MV_{tb} . During this scaling process, scalers 56, 58 apply a different scaling weight depending on, among other things, picture type and motion prediction direction (i.e., forward or backward) (Lim, col. 7, l. 59 - col. 8, l. 62; Fig. 6).

Specific methods performed by the first scaler 56 for scaling motion vector MV_{tt} are shown in Figures 9A through 9C of Lim. Specifically, Figure 9A shows a scaling method for forward motion prediction of the P picture (Lim, col. 10, ll. 10-25; Fig. 9A). Figures 9B and 9C illustrate scaling methods for forward and backward motion prediction, respectively, of the B picture (Lim, col. 10, ll. 26-60; Figs. 9B-9C).

Likewise, specific methods performed by the second scaler 58 for scaling motion vector MV_{bb} are shown in Figures 10A through 10C. Specifically, Figure 10A shows a scaling method for forward motion prediction of the P picture (Lim, col. 11, ll. 1-14; Fig. 10A).⁴ Figures 10B and 10C illustrate scaling methods for forward and backward motion prediction, respectively, of the B picture (Lim, col. 11, ll. 15-48; Figs. 10B-10C).

⁴ Although Lim indicates that Figure 9A (not 10A) shows this feature in connection with the second scaler 58 (Lim, col. 11, ll. 1-2), we presume that this is a typographical error based on our reading of the reference as a whole. We therefore presume that “Fig. 9A” was intended to be “Fig. 10A” in line 1 of column 11.

As shown in Figure 6, motion vectors MV_{tt} and MV_{bb} , the scaled motion vectors MV_{bt} and MV_{tb} , and frame path vector MV_{ff} are routed to the second motion prediction estimator 60 which comprises multiplexers 64 and 66. Specifically, motion vectors MV_{tt} and MV_{bt} are routed to multiplexer 64 and motion vectors MV_{bb} and MV_{tb} are routed to multiplexer 66. Both multiplexers select and output a motion vector to adder 68 which adds motion detection errors and outputs this added error to the field/frame determining circuit 70. The field/frame determining circuit then selects and outputs a motion vector having the smaller motion detection error value (Lim, col. 8, l. 63 - col. 9, l. 31; Fig. 6).

Based on this functionality, we find that Lim does not use (1) *only* the forward picture frame to predict the top field, or (2) *only* the backward picture frame to predict the bottom field as claimed. While we agree with the Examiner that the scaling methods shown in Figures 9C and 10B could each be construed *in isolation* to meet the recited limitations calling for predicting the picture frame's top and bottom fields, respectively, there is simply nothing in the reference to suggest that these methods can be considered in isolation without considering the overall operation of the system. Rather, considering the reference's teachings as a whole, Lim's system obtains the motion vectors in a bi-directional fashion that utilizes each of the scaling methods shown in Figures 9A-9C and 10A-10C, respectively. Therefore, Lim does not exclusively use (1) *only* the fields of the forward picture frame to predict the top field, and (2) *only* the fields of the backward picture frame to predict the bottom field as claimed.

For the foregoing reasons, we will not sustain the Examiner's rejection of independent claim 23 or dependent claim 24 for similar reasons.

Likewise, we will not sustain the Examiner's rejection of independent claim 26 or dependent claim 27 which recites commensurate limitations.

The Obviousness Rejection

With regard to the obviousness rejection of claims 25 and 28, the Examiner adds AAPA to Lim (Ans. 4). But since AAPA does not cure the deficiencies noted above with respect to the independent claims, the obviousness rejection of claims 25 and 28 is also not sustained.

DECISION

We have not sustained the Examiner's rejections with respect to any claims on appeal. Therefore, the Examiner's decision rejecting claims 23-28 is reversed.

REVERSED

tdl/gvw

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